Enhancing Resilience of Wet Meadows in the Gunnison Basin, Colorado

Gay Austin (BLM), Claudia Strijek (Strijek Design)

2014 Tamarisk Coalition Riparian Restoration Conference

Gunnison Basin Climate Change Vulnerability Assessment (TNC et al. 2011)

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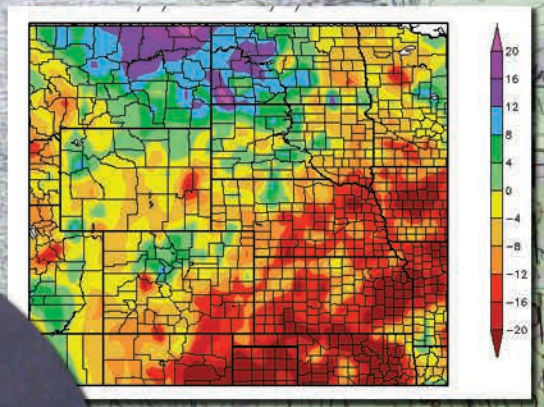
- Examined documented environmental changes
- Assessed vulnerabilities of individual species and plant communities
- Chose low elevation riparian areas and wetlands for test project



Goals

- Restore 500 – 800 acres of riparian areas
- Monitor the response
- Create tools for land managers
- Increase the resiliency of brood-rearing habitat
- Enhance forbs for insect production
- Increase forage for wildlife and livestock

Project Specifics

Site Selection

- GIS work
- Lek locations within habitat
- Riparian areas <2 miles from leks
- Ground truthing with riparian restoration expert, Bill Zeedyk
- Accessability

Installation

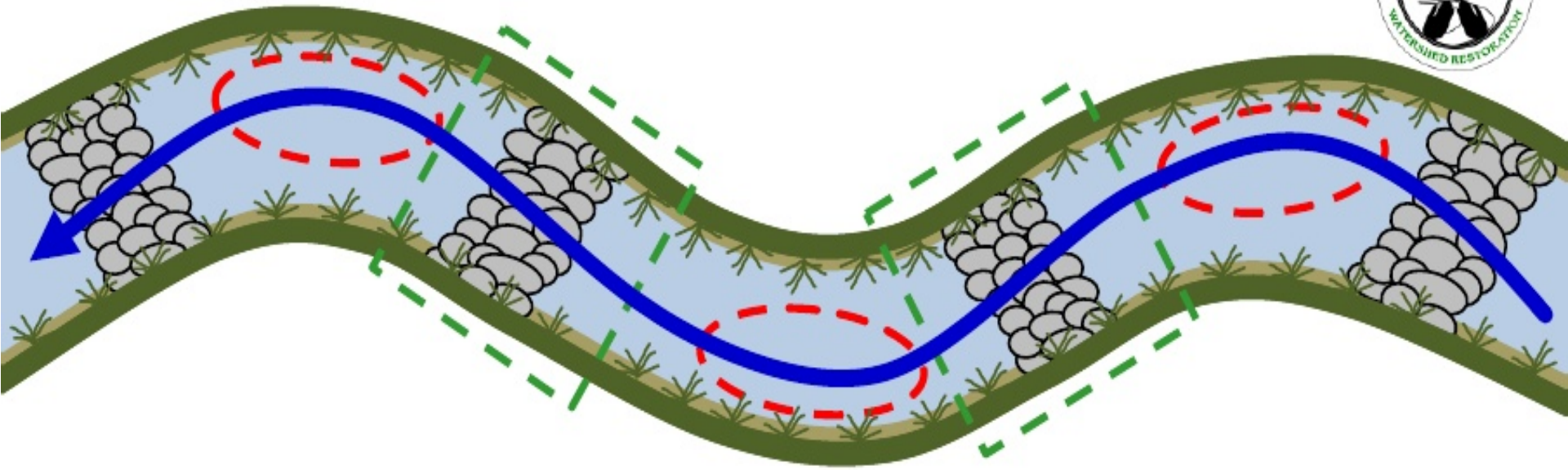
- Many hands! TNC, WSCU students, local coalitions, local residents, ranchers, agencies
- 240 structures, ~10 miles of stream

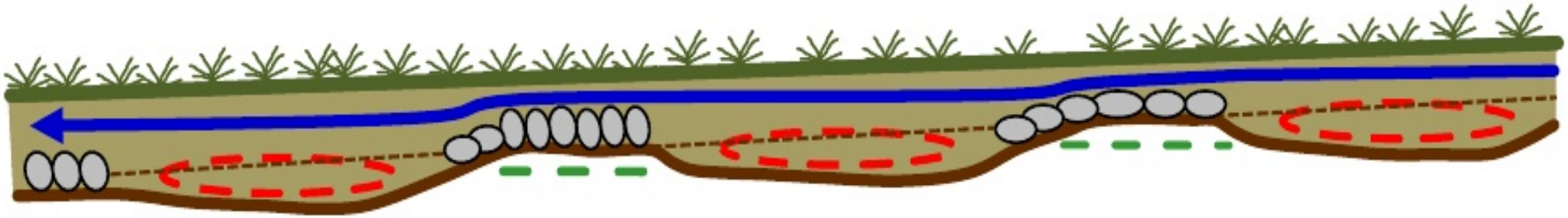
Methods

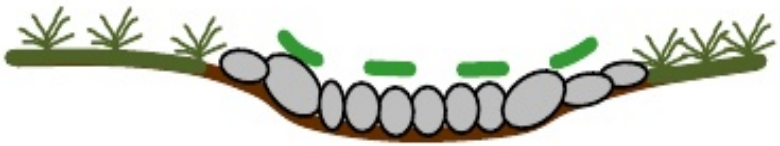
Structures

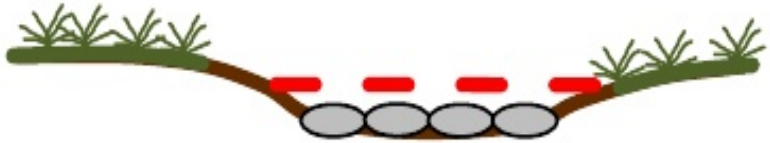
- One-rock dam, Media Luna, Zuni Bowl, Log Step Fall
- Material type/size important

ONE ROCK DAM

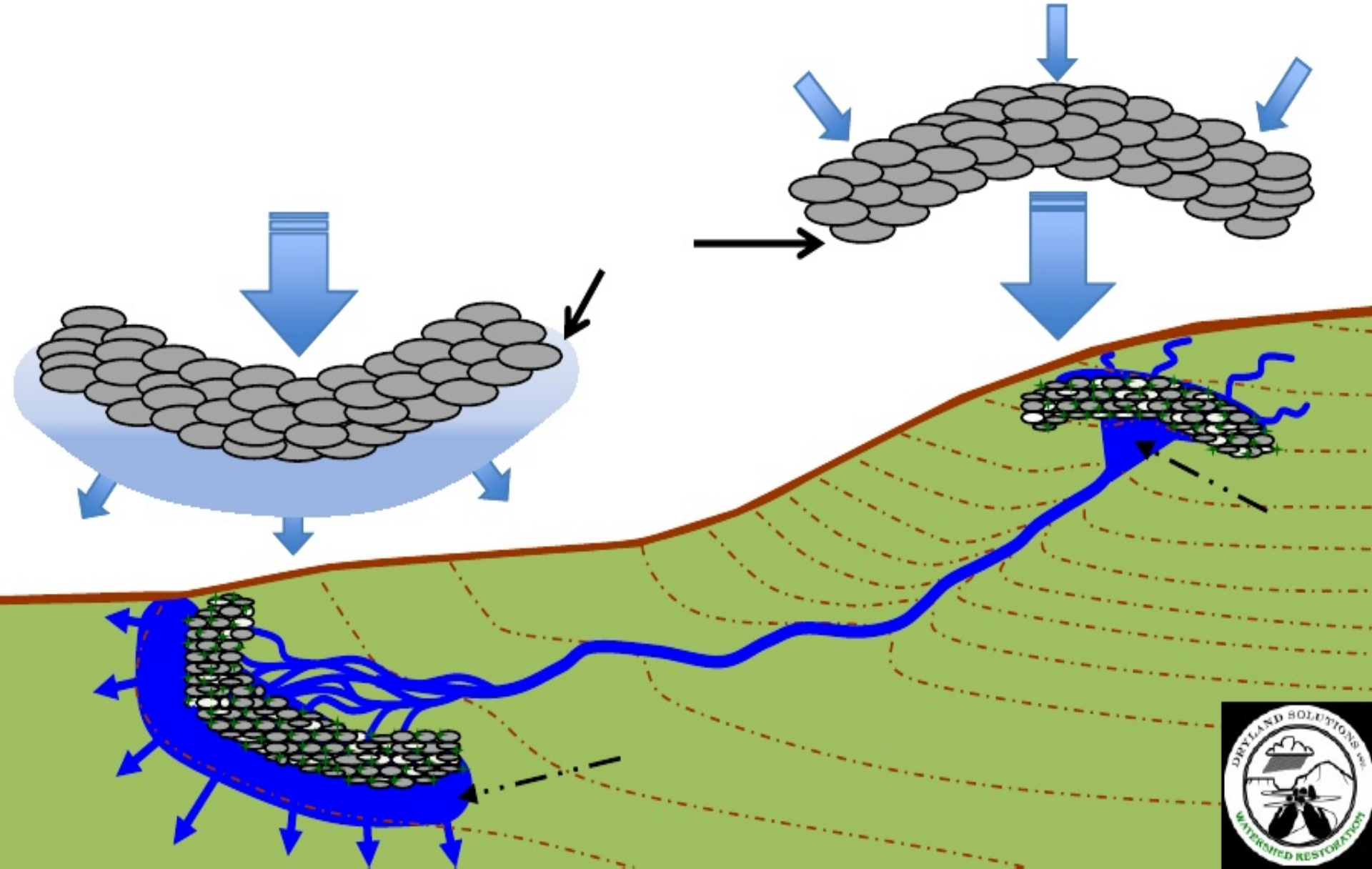




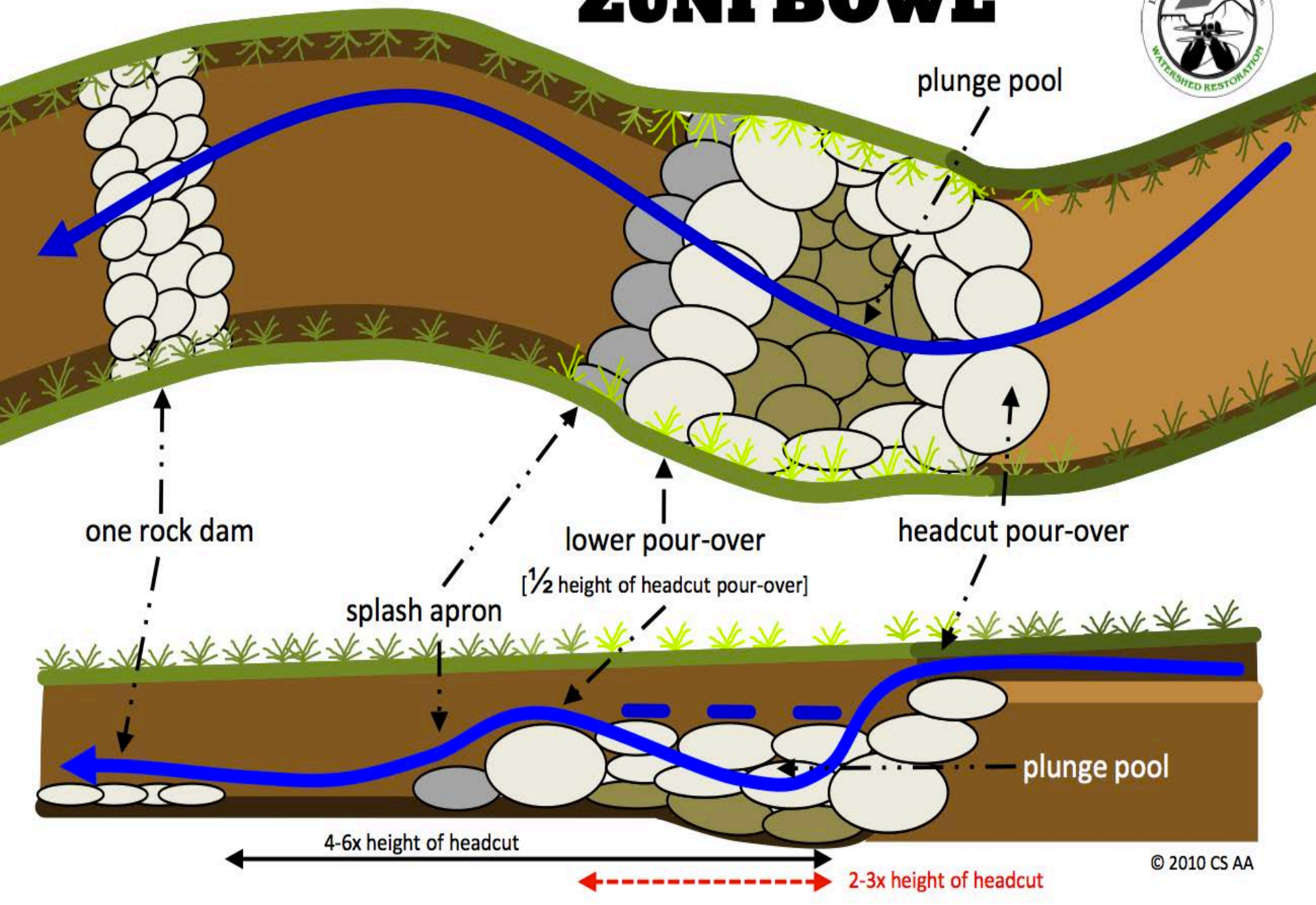




MEDIA LUNA

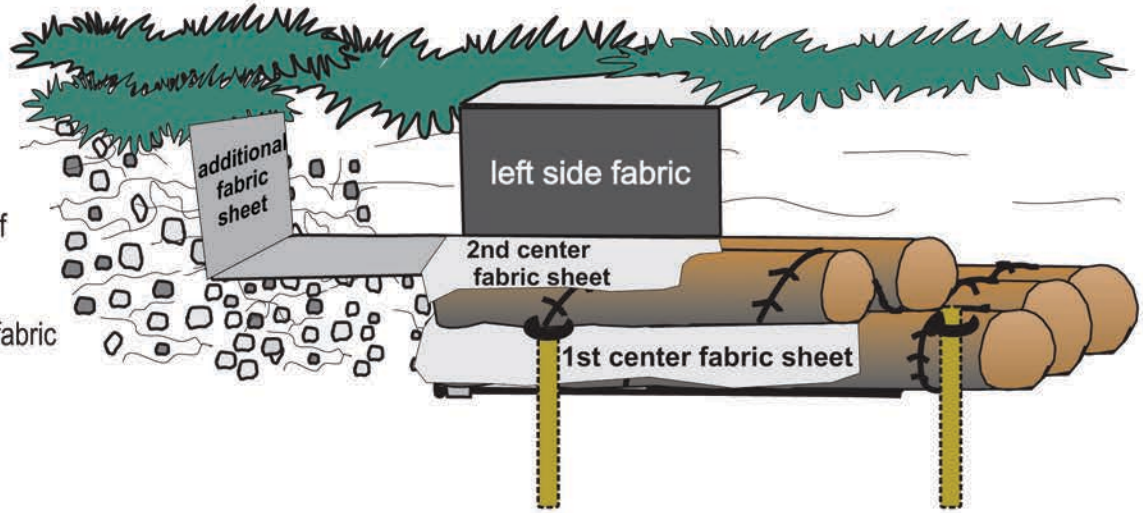


ZUNI BOWL



LOG AND STEP FALLS

Fold 2nd center fabric sheet on top of second tier. For the top tier of logs, excavate a platform upstream of the structure. Lay an additional piece of fabric on headwall and new platform.

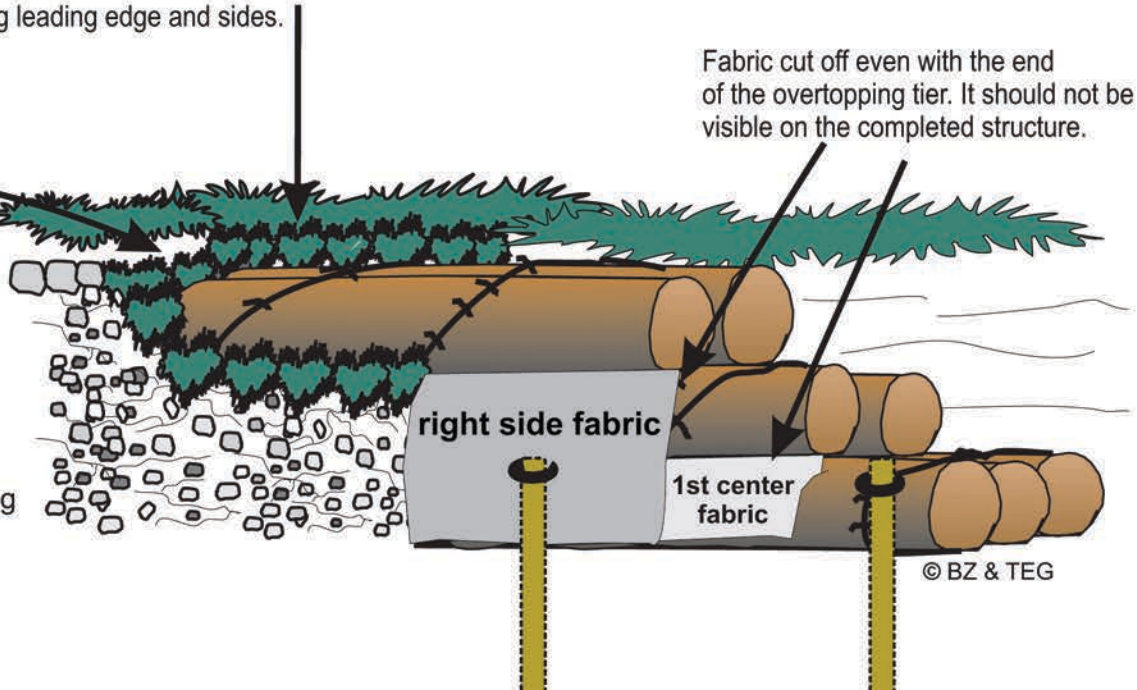


Sod wads planted along leading edge and sides.

Fabric cut off even with the end of the overtopping tier. It should not be visible on the completed structure.

leading edge

Fold down left and right sidewall sheets on top of 2nd tier.
Add final tier of logs slightly lower than the top edge and wire down.
Tuck in center fabric along the upper tier. Install sod clumps along theleading edge and sides.



Methods

Vegetation Monitoring

- Within floodplain below structures: line point intercept, heights, density
- Sagebrush height, cover measured 15 m above floodplain
- Photo points
- Controls

Water Monitoring

- Water wells installed to measure
  - Seasonal water table changes
  - Structures affecting water table away from stream

One Rock Dam on Ephemeral Stream

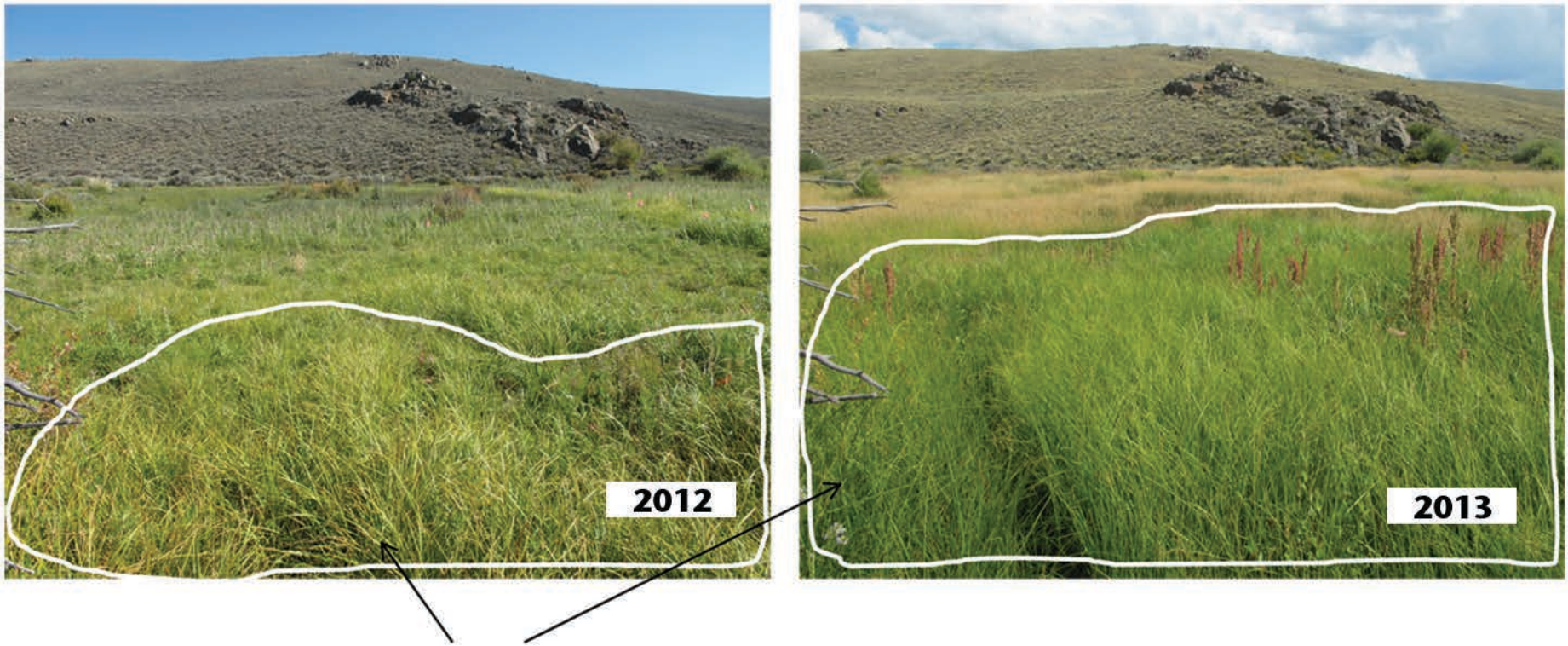
By 2013, sediments partially or completely covered many of the rocks. (Use the hammer to help locate the 2012 rocks and compare to the 2013 photo.)

Media Luna results at East Fork - Wolf Creek

Before photo:10-13-12

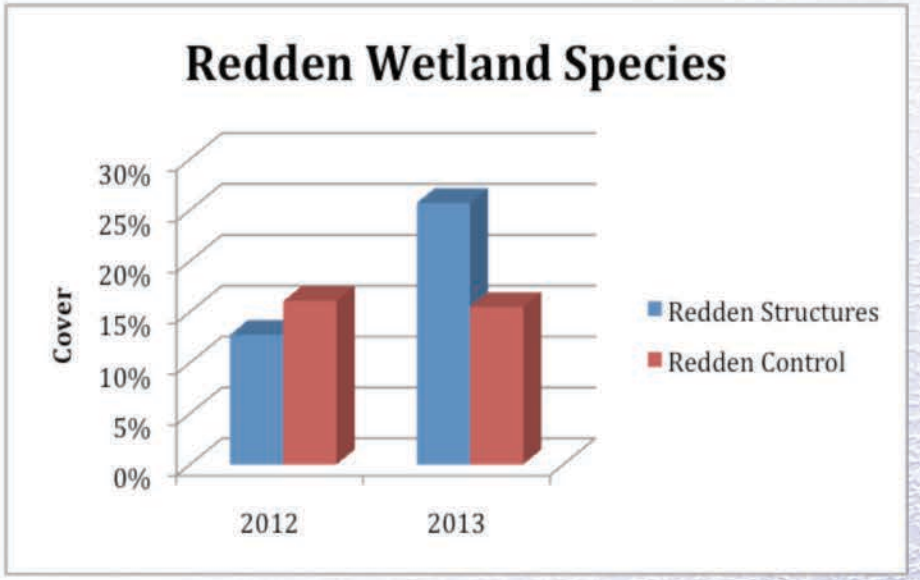
After photo: 9-20-13

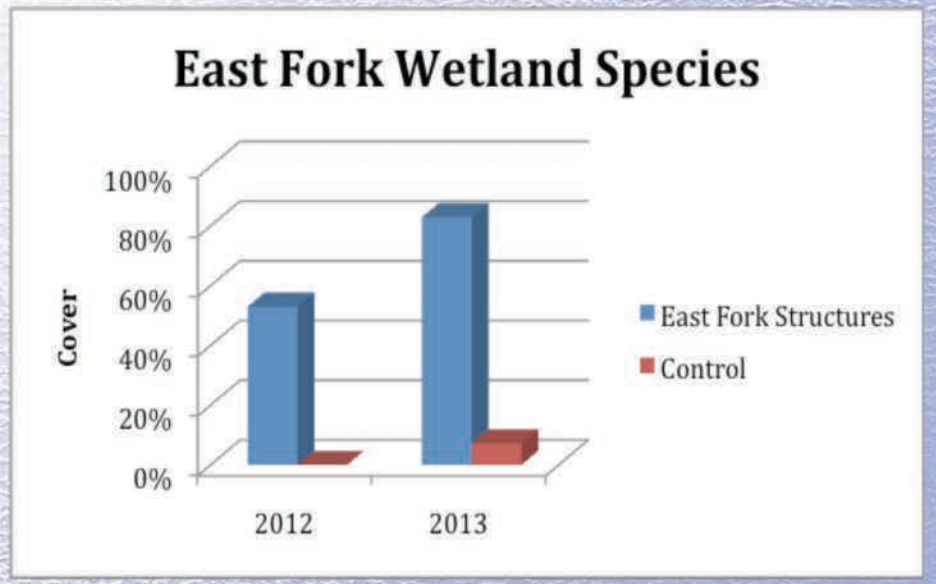
Expansion of Wetland Species



Carex utriculata, an obligate wetland species, expanded in area after the media luna was established.

Wetland Species Monitoring Data





Wetland species cover at Redden significantly increased (P=0.025) between 2012 and 2013, increasing from 13 to 26%, while the wetland species cover in the control did not change between 2012 and 2013.

The East Fork of Wolf Creek had a significant increase in cover (P=0.009) between years, from 53% in 2012 to 83% in 2013 while the control increased from 0 to 7%.

Lessons Learned

Critical

- Rock material estimates
- Installation timing
- Expertise required
- Rock size
- Organization
- Hired small crews

Rewards

- High community interest and participation
- Wetting of large previously dry areas
- Continuing to see sagegrouse
- Ranchers interested in methods
- Economically practical

Where do we go from here?

- Scaling up
- Continue monitoring
- Address road issues
- Funding

Credits

Betsy E. Neely[1], Andrew Breibart[2], Gay Austin[2*], Bill Zeedyk[3], Renee Rondeau[4], Nathan Seward[5], Matt Vasquez[6], Jonathan Coop[7], Jim Cochran[8], Claudia Strijek[9*]

1 The Nature Conservancy, Boulder, CO, USA; bneely@tnc.org

2* Bureau of Land Management, Gunnison, CO, USA; abreibart@blm.gov, gaustin@blm.gov

3 Zeedyk Ecological Consulting, Sandia Park, NM, USA; billzeedyk@centurylink.net

4 Colorado Natural Heritage Program, Durango, CO, USA; renee.rondeau@colostate.edu

5 Colorado Parks and Wildlife, Gunnison, CO, USA; Nathan.Seward@state.co.us

6 US Forest Service, Gunnison, CO, USA; mgvasquez@fs.fed.us

7 Western State Colorado University, Gunnison, CO, USA; jcoop@western.edu

8 Gunnison County, Gunnison, CO, USA; jcochran@gunnisoncounty.org

9* Strijek Design, Gunnison, CO, USA; claudia@strijekdesign.com

(* Presenters)

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